

**WHAT IS CLAIMED IS:**

- 1           1.       A media detection system comprising:  
2                   a sensor;  
3                   a flag pivotally supported proximate to a media path through which  
4 media is moved, wherein the flag pivots as the media is moved through the media  
5 path such that the flag interacts with the sensor to cause the sensor to alternate  
6 between two states to produce position signals representing at least four distinct  
7 positions of the media along the path and wherein the flag is configured to remain  
8 substantially in one angular position for a portion of time while the medium is moving  
9 and in contact with the flag.
- 1           2.       The system of Claim 1, wherein the sensor comprises an optical sensor  
2 and wherein the flag includes a window that is pivoted relative to the optical sensor.
- 1           3.       The system of Claim 2, wherein the flag includes no greater than one  
2 window.
- 1           4.       The system of Claim 1, wherein the flag pivots less than 360 degrees.
- 1           5.       The system of Claim 1, wherein the flag pivots about an axis and  
2 wherein the flag nonsymmetrically extends from the axis.
- 1           6.       A media feed device comprising:  
2                   a media path;  
3                   a first media transfer member configured to contact a medium and to  
4 move the medium along the media path;  
5                   a media detection system including:  
6                       a sensor; and  
7                       a flag pivotally supported proximate to the media path through  
8 which media is moved, wherein the flag pivots as the media is moved through the  
9 media path such that the flag interacts with the sensor to cause the sensor to alternate  
10 between two states to produce at least four position signals representing at least four

11 distinct positions of the media along the path and wherein the flag is configured to  
12 remain substantially in one angular position for a portion of time while the medium is  
13 moving and in contact with the flag.

1 7. The device of Claim 6, including a second media transfer member  
2 configured to contact the medium and to move the medium along the path to the first  
3 transfer member.

1 8. The device of Claim 6 wherein the feeder has a media input and is  
2 configured for use with a media interaction device having a media interaction  
3 mechanism that interacts with the medium for the transfer of image data in at least  
4 one direction between the medium and the interaction device and wherein the flag is  
5 configured to extend into the media path between the input and the interaction  
6 mechanism.

1 9. The device of Claim 6 including:  
2 a second media transfer member configured to contact the medium and  
3 to move the medium along the path to the first transfer member;  
4 a controller in communication with the sensor; and  
5 an actuator in communication with the controller and operably coupled  
6 to the second media transfer member, wherein the flag is biased towards a first  
7 position when not in engagement with the medium, wherein the sensor produces a  
8 first position signal in response to the flag being in the first position and wherein the  
9 controller generates first control signals based upon the first position signal.

1 10. The device of Claim 9, wherein the second media transfer member is  
2 in a medium driving state in response to the first control signal.

1 11. The device of Claim 10, wherein the flag is configured to be pivoted  
2 by the medium moving along the path from the first position to a second position,  
3 wherein the sensor is configured to produce a second position signal in response to the  
4 flag being in the second position and wherein the controller is configured to generate  
5 second control signals based upon the second position signal.

1           12.     The device of Claim 11, wherein the second media transfer member  
2 moves to a non-driving state in response to the second control signals.

1           13.     The device of Claim 11, wherein the flag is configured to be pivoted to  
2 a third position by the medium moving along the path, wherein the sensor is  
3 configured to produce a third position signal in response to the flag being in the third  
4 position and wherein the controller is configured to generate third control signals  
5 based upon the third position signal.

1           14.     The device of Claim 13, wherein the controller is configured to  
2 transmit the third control signals to the interaction mechanism and wherein the  
3 interaction mechanism actuates between an active state and an inactive state in  
4 response to the third control signals.

1           15.     The device of Claim 13, wherein the flag is configured to be pivoted to  
2 a fourth position by the media moving along the path, wherein a sensor produces a  
3 fourth position signal in response to the flag being in the fourth position and wherein  
4 the controller generates a fourth control signal based upon the fourth position signal.

1           16.     The device of Claim 15 including a jam indicator which indicates a  
2 jam in response to the fourth control signal.

1           17.     The device of Claim 16, wherein the controller is configured to  
2 generate the fourth control signal in response to receiving the fourth position signal  
3 for a predetermined period of time.

1           18.     A media interaction device comprising:  
2                   an image interaction mechanism;  
3                   a media path extending from a media input to the image interaction  
4 mechanism;  
5                   a media detection system including:  
6                         a sensor; and

7                   a flag pivotally supported proximate to a media path through  
8   which media is moved, wherein the flag pivots as the media is moved through the  
9   media path such that the flag interacts with the sensor to cause the sensor to alternate  
10   between two states to produce at least four position signals representing at least four  
11   positions of the media along the path and wherein the flag is configured to remain  
12   substantially in one angular position for a portion of time while the medium is moving  
13   and in contact with the flag.

1           19.    The device of Claim 18, wherein the image interaction mechanism is  
2   configured to read image data from the medium.

1           20.    The device of Claim 19, wherein the image interaction mechanism  
2   comprises a scanner.

1           21.    The device of Claim 18 including a first medium transfer member  
2   configured to contact the medium and to move the medium along the media path.

1           22.    The device of Claim 21 including a second medium transfer member  
2   configured to contact the medium and to move the medium along the path to the first  
3   transfer member.

1           23.    The device of Claim 22 including a controller in communication with  
2   the sensor, wherein the sensor is configured to generate first position signals in  
3   response to the flag being in a first position prior to being in contact with the medium  
4   along the path, wherein the controller is configured to generate first control signals  
5   based upon the first position signals and wherein the first media transfer member and  
6   the second media transfer member are configured to drive the medium along the path  
7   in response to the first control signals.

1           24.    The device of Claim 23, wherein the flag is configured to be moved by  
2   the medium moving along the path from the first position to a second position,  
3   wherein the sensor is configured to generate a second position signal in response to  
4   the flag being in the second position, wherein the controller generates second control

5 signals based upon the second position signal and wherein the second media transfer  
6 member is in a non-driving state in response to the second control signals.

1 25. The device of Claim 24, wherein the flag is configured to be moved by  
2 the medium moving along the path from the second position to a third position,  
3 wherein the sensor is configured to produce a third position signal in response to the  
4 flag being in the third position, wherein the controller is configured to generate third  
5 control signals based upon the third position signal and wherein the image data  
6 interaction mechanism actuates between an active state and a non-active state in  
7 response to the third control signals.

1 26. The device of Claim 25, wherein the flag is configured to be moved  
2 from a third to a fourth position by the media moving along the path, wherein the  
3 sensor is configured to produce a fourth position signal in response to the flag being  
4 in the fourth position, wherein the controller is configured to generate fourth control  
5 signals based at least in part on the fourth position signal.

1 27. The device of Claim 26, including a jam indicator configured to  
2 indicate a jam in response to the fourth control signals.

1 28. The device of Claim 27, wherein the controller generates the fourth  
2 control signals in response to receiving the fourth position signal for a predetermined  
3 period of time.

1 29. The device of Claim 18, wherein the sensor comprises an optical  
2 sensor, wherein the flag includes a window which is pivoted relative to the optical  
3 sensor and wherein the flag is configured such that the window remains in one  
4 angular position for a portion of time as the medium is moved along the path in  
5 contact with the flag.

1 30. A method for interacting with a medium along a path, the method  
2 comprising:  
3 locating a flag in the path in a first position relative to a sensor that  
4 alternates between two states;

5                   producing a first position signal in response to the flag being in the  
6 first position;  
7                   pivoting the flag from the first position to a second position in response  
8 to movement of the medium along the path;  
9                   producing a second position signal in response to the flag being in the  
10 second position;  
11                  pivoting the flag from the second position to a third position in  
12 response to movement of the medium along the path;  
13                  producing a third position signal in response to the flag being in the  
14 third position;  
15                  pivoting the flag from the third position to a fourth position in response  
16 to movement of the medium along the path;  
17                  producing a fourth position signal in response to the flag being in the  
18 fourth position; and  
19                  maintaining the flag in the fourth position until the medium disengages  
20 the flag.

1           31.    The method of Claim 30 including indicating a medium jam in  
2 response to receiving the fourth position signal.

1           32.    The method of Claim 30 including cessating transmission of moving  
2 force to the medium in at least one location along the path in response to receiving the  
3 second position signal.

1           33.    The method of Claim 30 including interacting with the medium to read  
2 image data from the medium or to form an image upon the medium based upon  
3 receipt of at least one of the second position signal and the third position signal.

1           34.    A medium interaction device comprising:  
2                  a media path  
3                  means for physically contacting a medium as the medium moves along  
4 the media path to alternate a sensor between two states to produce four position  
5 signals in response to the medium being located at four positions along the path,

6 wherein the means produces one of the four position signals for a period of time as a  
7 majority of a surface of the medium moves along the path while in contact with the  
8 means.

1 35. The device of Claim 34 including means for indicating a medium jam  
2 in response to said one of the four position signals being received for a predetermined  
3 period of time.

1 36. The device of Claim 35 including means for terminating transmission  
2 of force to the medium at at least one location along the medium path in response to a  
3 second one of the four position signals.